Social and Ecological Responsibility: A Critical Systemic Perspective

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Social and Ecological Responsibility: A Critical Systemic Perspective

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ABSTRACT

The notion of systemic thinking for social and ecological responsibility is deconstructed and its holistic potential examined from a critical systemic perspective informed by the ideas of the systems philosopher, C. West-Churchman. *Systemic thinking* involves being critically aware of the boundaries in which we work and the boundaries to which we apply our expertise. It involves making boundary judgements based on appropriate practical and theoretical interaction resulting in action which, it is argued, serves an explicit emancipatory potential. *Social and ecological factors* are considered as those components lying outside the boundaries of the system of interest and therefore outside the control of those, including systems practitioners, involved in the system of interest. *Response-ability* relates to how well a system of interest responds to its environment of social and ecological factors. The potential value and dilemma of 'systemic thinking for social and ecological responsibility' is captured in Churchman's discomforting call for systems practitioners to perpetually be open to and invite 'enemies'.

1 Introduction

In a special issue on *Systems Thinking for Social Responsibility* in the journal *Systems Research and Behavioural Science*, the editorial tells a story of various interests amongst Operational Research (OR) and Systems practitioners in recent years around the theme 'systems thinking for social and environmental responsibility' (Gregory and Midgely 2003). One initiative detailed in the editorial which I became involved with is the establishment of a new network, Systemic Thinking for Social and Environmental Responsibility (ST-SER Network).[1]

This article is an attempt at describing my own understanding of social and environmental responsibility from a critical systemic perspective. In this paper I use the term 'ecological' instead of 'environmental'. The reason is that in *Systems thinking* the 'environment' is used in a different sense from that of the natural environment. A fundamental *boundary* in systems thinking is that between a system and its environment. From a systems perspective, factors in the 'natural environment' like water, soil, crops, livestock etc. very often fall *within* the boundaries of a system - e.g., components of a farming household system. From a general systems perspective, the environment consists of factors *outside* the system's boundary; factors not controlled by the system (e.g., the supply mechanisms for fertilizer or weather conditions in relation to the farming household system) but which have relevance to the system's performance. Also, I will refer to systems as constituting *systems of interest* relating to 'maps' of the territory of the real world imbued with some human relevance, rather than as some actual objective 'territory' existing in the real world.

The paper is divided into two halves. The first half, comprising of the next three sections, provide some general appreciation of the terms 'systemic thinking', 'social and ecological factors', and 'response-ability'. Drawing mostly on the works of the systems philosopher/ practitioner C. West-Churchman, social and ecological factors

[1] For further details see the ST-SER Network website www.st-ser.net.

are demarcated in terms of belonging either to the system of interest or its environment. Churchman's notion of inviting *enemies* is further identified as particularly significant to appreciating the discomfort associated with incidences of critical systemic responsibility. The second half of the paper gives a more holistic portrayal of a critical systemic perspective on social and ecological responsibility. Drawing on my own research experience, two examples of such discomforting incidences are provided. In each case, two systems of interest are referred to: a first order system belonging to the subject matter being researched, and a second order system in which my own involvement as a researcher is included.

2 Systemic thinking

Whilst the term 'systemic' has gained considerable positive popular currency, its precise meaning appears often to be presumed. I draw on four descriptions used by systems practitioners to explain my own understanding of systemic thinking. The four prompts involve descriptions of (i) a systemic approach, (ii) systemic intervention (iii) systemic boundary critique, and (iv) critical systemic thinking. Bell and Morse (1999) in defining a *systemic approach* to sustainability analysis suggest the need for a change in the mindset of an intervener, "from an observer divorced from context (first order) to an observer deeply involved in the context (second order)… (and consequently)… the movement from reductionist to holistic paradigms" (*ibid* p.84). To emphasise the approach envisaged they quote on two occasions the comments from Buddrus, in relation to the transformation of awareness required from practitioners of first order cybernetics to practitioners of second order cybernetics:

> "… the transition of oneself from an *observer* of a reality which is considered to be outside oneself, to a *participant* in the same reality, and then towards being a *co-creator* of that reality, requires fundamental cognitive and emotional reorientation" (Buddrus, 1996, quoted in Bell and Morse, 1999 p. 85, p. 99. My italics)

The three inter-relating though complementary roles of a systemic practitioner signalled in italics above are evident in the second description of a systemic approach as provided by Midgley (2000; 2003). In the latter paper, Midgley argues that 'observation' skills, commonly associated with natural science, ought to be considered a key component of *systemic intervention*. Systemic intervention is here defined as "purposeful action by an agent to create change in relation to boundaries" (p.89). Midgley specifies three dimensions of a methodology for systemic intervention. First, there is the need for agents to engage with *boundary critique* in reflecting critically upon the choices between what ought to be included within, and therein excluded from, the remit of study or intervention (including issues and people). Second, there is a need to focus on *theoretical and methodological pluralism* as a means of making a judgement on choices between theories and methods. Third, an adequate systemic methodology should be explicit about defining the parameters of, and acting for, *improvement*. Although not explicitly stated, the three activities of systemic intervention reflect precisely Midgley's own interpretation of three commitments associated with 'critical systems thinking' (CST) (Midgley 1996).

Gerald Midgley's 2003 paper focuses particularly on the systemic dimension of *methodological pluralism* as a route to embrace the notion of scientific 'observation' as constituent of systemic intervention. This concern for methodological pluralism and choice might be seen as reflecting a peculiar central feature of CST as expressed since the mid 1990s at the Centre for Systems Studies at Hull University where Midgley works. My third source of inspiration for clarifying systemic thinking is Werner Ulrich who identifies himself within a distinctly different strand of CST (Ulrich 2003). Ulrich describes the usefulness of CST for professional reflective practice in terms of providing 'critically systemic discourse' which he characterises as *systemic boundary critique* (based on his earlier detailed work on 'critical systems heuristics' (Ulrich 1983)). Ulrich's parameters can be compared directly with Midgley's three dimensions of systemic intervention. First, like Midgley, Ulrich reinforces the need for boundary critique as an *a priori* constituent of systemic thinking. However, and this relates to the second dimension, rather than having a consensus-seeking 'pluralism' as the main driver, Ulrich's systemic boundary critique focuses on critical argumentation as a basis for a discursive approach. Ulrich also makes the point that such a discursive approach needs to provide for the public sphere by involving and serving public citizens. Third, there is a shift of emphasis from a concern over methodological choice to a concern for an emancipatory constituent inherent within critical argumentation. Whereas Midgley moves away from the use of the word 'emancipation', preferring instead to use 'improvement' as a more explicitly subjective term (i.e., improvement for whom?), Ulrich argues for a more robust and deeper usage of the term emancipation. Here, it is not simply used as an ideological commitment on behalf of the practitioner, but as a deeper constituent underpinning the methodological commitment of critique.

Both Midgley and Ulrich are very much influenced by my own fourth source of inspiration for describing systemic thinking, C. West-Churchman (1971; 1979). Churchman's work has been described (appropriately, in my view) as constituting *critical systemic thinking* (Flood 1999).[2] We can relate Churchman's ideas to Bell and Morse, Midgley, and Ulrich. First, Churchman is a pioneer in the shift from first to second order cybernetics. He was one of the first to make the epistemological leap in suggesting that systems are not objective entities simply waiting to be 'observed'. Systems are better described in terms of 'whole systems judgements' used primarily to raise peoples' understandings through positing the right questions rather than seeking some absolute truth through advancing supposedly right answers. Crucially, what gives a system its character is 'purpose'. The boundaries of any system are therefore initially defined in terms of purpose. Churchman describes the critique of boundaries in terms of, firstly, a 'sweep in process', whereby boundaries of a purposeful system might be extended to incorporate different meanings, and secondly, a 'process of unfolding', a critical counterpart where the boundaries might be more critically examined with respect to different meanings. A second key feature of Churchman's systemic thinking is not just the incidence and exposure of multiple and often conflicting values in systemic intervention, as revealed in the process of unfolding, but the necessity for managing diversity and conflict. Along with Ulrich, Churchman does not subscribe to the idea of consensus-seeking as the main driver for systemic intervention, but does emphasise the importance of allowing for critique,

[2] In this book, Robert Flood uses Churchman's work amongst other systems writers to critique and reveal the inadequacy of the influential and popular interpretation of 'systemic thinking' as embodied in the title of Peter Senge's book *The Fifth Discipline*.

debate and argumentation. Finally, Churchman's work, as Flood (1999) reminds us, is imbued with an "intensity of feeling about a moral commitment to human betterment" (p.66). In the same way that Midgley argues for a commitment to action for improvement, Churchman talked of the need for *securing* improvement.

In line with Churchman and Midgley, I think there ought to be an article of faith and hope (idealism) attached to systemic thinking. Whilst agreeing with Ulrich (2003) in his concern for retrieving the emancipatory interest as a *methodological* imperative in dealing with what he calls the structural asymmetries of discourse, I would also argue for the retrieval of an *ideological* imperative. In my view, an emancipatory intent signals not just a methodological commitment towards effective communication for systems practitioners and public citizens in the argumentative realm (as argued particularly by Ulrich), but also a broader moral commitment towards addressing coercive forces of power and deception in the non-argumentative realm. Such forces are the result of our (human) systems design and implementation, and they act on human as well as non-human nature. The ethical orientation of systemic thinking triggers questions as to (i) who and/or what is *affected by* systems design and implementation, and (ii) what might be an appropriate response to such effects. In short, what do we understand by social and ecological responsibility from a systemic perspective? Churchman, and some further elaboration of Churchman's work by Ulrich, enables us to address such questions.

3 Social and ecological factors

From a *critical systemic perspective* the system/ environment boundary described in the introduction is in my view also significant in separating those factors *involved with* a system of interest from those factors *affected by* a system of interest. Churchman, whilst acknowledging the system's environment, dealt initially with only conditions associated with those involved in a system of interest. He identified nine conditions (derived from Kantian philosophy) that must be fulfilled for a system (S) to demonstrate purposefulness. The conditions are reproduced in summary below (adapted from Churchman, 1971 p.43)

1. S is teleological (or 'purposeful')
2. S has a measure of performance
3. There is a client whose interests are served by S
4. S has teleological components which co-produce the measure of performance of S
5. S has an environment (both social and ecological components)
6. S has a decision maker who can produce changes in the measure of performance of S's components and hence changes in the measure of performance of S
7. S has a designer who influences the decision maker
8. The designer aims to maximise S's value to the client
9. There is a built in guarantee that the purpose of S defined by the designer's notion of the measure of performance can be achieved and secured

Churchman later reordered these nine conditions into three groups of three categories; each group corresponding with a particular *social role* - client, decision maker, and planner (1979 p.79). Each category is associated with two allied categories which Ulrich (1983) later termed *role specific concerns* and *key problems.* Ulrich also identified each category group with a term reflecting the primary source of influence - *motivation*, *control*, and *expertise* - for client, decision maker, and planner (or "designer") respectively (p.250) (see Table 1).

Churchman's 1971 nine conditions for a purposeful system	**Churchman's 1979 three groups of three categories for a purposeful system**	**Ulrich's 1983 sources of influence informing a purposeful system**
Group 1		
condition 3.	*social role*: client	sources of motivation: whose purposes are served?
condition 1.	*role specific concerns*: purpose	
condition 2.	*key problems*: measure of performance	
Group 2		
condition 6.	*social role*: decision maker	sources of control: who has the power to decide?
condition 4.	*role specific concerns*: components	
condition 5.	*key problems*: environment	
Group 3		
condition 7.	*social role*: planner/designer	sources of expertise: who has the know-how?
condition 8.	*role specific concerns*: implementation	
condition 9.	*key problems*: guarantor	

Table 1 **Categories of 'Involved' in a Purposeful System's Design**
(adapted from Ulrich, 1983:245-250)

Later, Churchman (1979 p.80) also signalled a role for those *affected* by, but not involved with, systems design, and provides a self-reflective description of an additional three categories that centre around the role of what he called the *systems philosopher*; along with the two related categories, the *enemies of the systems approach* ('role concerns') and *significance* ('key problems'). It is Ulrich (1983) in his formulation of *critical systems heuristics* (CSH) who systematically distinguishes between those *involved* in a system's design and those *affected* by a systems design so as to define the latter role more concisely for social systems planning. The category of those affected by, but not involved in, systems design are designated by Ulrich as being the *witness*; those who in practical discourse will argue the case of the affected. The role specific concerns of the witness are conceptualised as those of *emancipation*; liberation from oppressive material conditions and false consciousness, or the promises and premises or power and deception associated with the dominant system. The final 'key problem' category represents the possibilities of a conflict in *worldviews* ('Weltanschauung') - "different visions of what social reality and human life in it ought to be" (p.252) - between the involved and the affected. Consequently the "source of influence" for this category group is defined as the *source of legitimisation*. Table 2 summarises Ulrich's twelve "critical-heuristic categories".

Categories			Dimensions of intentionality		
1	Client?	(role)	Sources of motivation	Those involved	The purposeful system of interest in its environment (or context of application) on which depends the meaning of 'improvement'
2	Purpose?	(concerns)			
3	Measure of improvement?	(problems)			
4	Decision maker?	(role)	Sources of control		
5	Components?	(concerns)			
6	Environment?	(problems)			
7	Planner?	(role)	sources of expertise		
8	Expertise?	(concerns)			
9	Guarantor?	(problems)			
10	Witness?	(role)	sources of legitimisation	Those affected	
11	Emancipation?	(concerns)			
12	Worldview?	(problems)			

Table 2 **Critical-Heuristic Categories.**
(adapted from Ulrich, 1983 p.258)

To what extent might the twelve CSH categories be translated into social and ecological factors? There are three general issues to note.

1. Categories are heuristic: Categories are not presented as constituting absolute real-world entities (e.g., often the 'roles' are interchangeable) but rather learning devices for attempting to understand or make sense of situations or systems of interest. The categories are only relevant to a system of interest as defined by a purpose.
2. Stakeholders and Stakes: The categories can be a source for identifying the range of 'stakeholders' (categories 1,4,7, and 10) – social factors - and their concerns or 'stakes' (categories 2,5,8 and 11) – social and ecological factors - relevant to any particular situation of interest.[3] Along with Vos (2002), I have personally found these categories highly useful for stakeholder analyses associated with research. For any focus of research (considered as a system of interest), it is useful to identify, first, the underlying purpose of the system and associated intended beneficiaries, second, the resources needed to enable the system to work and those in command of such resources, and third, the expertise and associated experts used to secure success of the system's purpose. From a critical systemic perspective, it also imperative to (i) think about short and long term possible effects of the system of interest, and those who may represent the interests of the affected, and (ii) reflect on the location of the researcher as a key stakeholder (see note 5 below).
3. Anthropocentric ('social') bias: The 12 categories are human-centred (anthropocentric in character). Ecological factors are only represented as 'role concerns' or 'key problems' *in relation to* human defined 'roles'. Given that 'systems', at least in the first instance of understanding, are simply conceptual frameworks, and hence inevitably anthropocentric, the issue, in my view, is how we critically deal with our anthropocentric bias rather than pursuing some extreme ecocentric ideal in supposedly removing such bias.[4] For example, given a

[3] Where 'future generations' are considered as stakeholders, this is treated as a key concern (category 11) associated with the 'witness' (category 10).
[4] Ulrich makes a similar point Ulrich, W. (1993). "Some Difficulties With Holistic Thinking." Systems Practice **6**(6): 583-608.

particular system of interest, the heuristic enables us to question the extent to which it might be right or appropriate to treat a particular ecological factor as a *resource* for that system (category 5) rather than as an entity with its own *intrinsic value* (category 11).

There are two further issues to note with particular respect to a critical systemic perspective on social and ecological *responsibility.*

4. The 'environment' and the 'affected': The system's 'environment' (category 6) is identified as a key problem category associated with the decision maker. It is problematised since it consists of those factors (both social and ecological) which are not under the *control* of the decision maker – i.e. factors, components or resources (both social and ecological) that are normally constituent of category 5 - but which can nevertheless possibly have an *effect on* the system. From a critical systemic perspective, such factors might also be constituent of categories 10, 11 and 12. What this means is that the system's environment is not only constituent of factors that may affect the system (non-component but relevant) but also, significantly, factors that are *affected by* the system (non-component and, in an immediate sense, non-relevant). From a systemic viewpoint, given that such social and ecological factors might be affected by the system suggests that these factors may in time have a reciprocal effect on the system and hence acquire relevance. Hence, whilst such factors are *de facto* marginalised (not component) they might nevertheless be the source of unforeseen consequences. Features of this broader understanding of a system's environment (and associated factors) from a critical viewpoint can thus be summarised: (a) non-component to the system of interest (SoI); (b) unbounded (from viewpoint of the SoI) and hence 'irrational' (from viewpoint of the SoI); (c) constituent of both social and ecological factors; (d) independent of the SoI, or out of the remit of *control* from decision makers associated with the SoI; (e) immediately relevant to the SoI with regards to having an (uncontrolled) effect (or influence) on the SoI; and (f) relevant in longer term with regards to being affected (or influenced) by the SoI with possible unforeseen consequences or effects.
5. Role of the systemic practitioner: The practitioner or other 'expert' can be understood as a key 'social factor' who can take on board two roles; one primary and one secondary. The primary 'expert' role associated with any system of interest is that of category 7, the 'planner' or in Churchman's original terms, the 'designer'. Here the practitioner is an *involved* participant in the system of interest though, significantly (as a heuristic ideal!), not under the *control* of the decision maker. Decisionism is the term given when expertise is under the control of decision makers (effectively a component of category 5. See Figure 1 below). The expert's role is to provide some kind of guarantee or security (i.e. expertise within expert support) that the system's stated purpose (category 2) can be achieved. The key problem associated with this role is the fact that an expert cannot be an absolute guarantor given the uncertainties associated with the unknowable.[5] A secondary role for the reflective systemic practitioner, as part of

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[5] Both Churchman and Ulrich, drawing on Kantian critique, make clear that such guarantees can never be absolute. Elsewhere I have attempted to map out some parameters of co-guarantor attributes Reynolds, M. (2001). Co-Guarantor Attributes: A Systemic Approach to Evaluating Expert Support. Eighth

the expert role, I would argue, is that of category 10, the ‘witness’. Together, these two roles address Churchman’s concern for what he calls the total relevant system. This dualistic role is the subject of discussion in the next section.

4 Response-ability

Figure 1 below illustrates the dimensions of response from experts to different stakeholders and stakes (social and ecological factors) associated with a system of interest and its environment. The diagram uses the critical heuristic categories presented in Table 2.

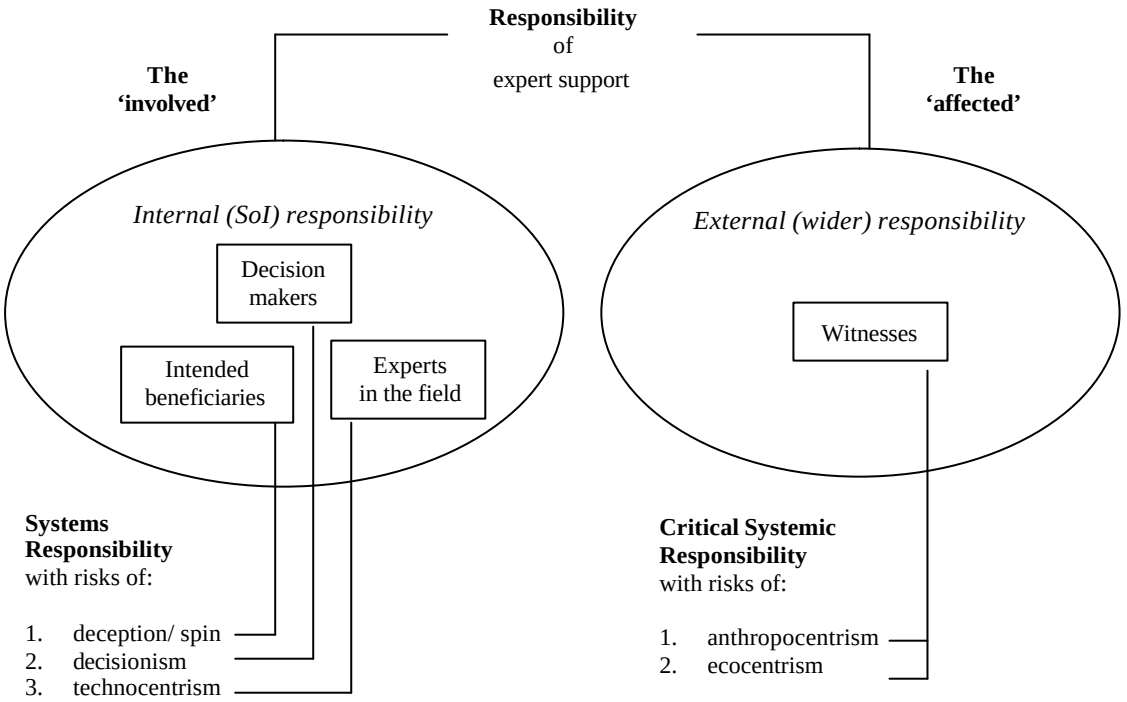

Fig. 1 **Dimensions of responsibility associated with expert support**

The two ovals represent the totality of social and ecological factors to which an expert ought to be responsive. The oval representing what I term 'systems responsibility' represents those factors to which an expert is normally expected to respond to as part of the terms of reference for intervention. The risks of overstating the responsibilities in this sphere reside in tendencies towards (i) conjuring up false expectations to placate intended beneficiaries (deception/ spin), (ii) allowing those in command of resources (associated with the system of interest) to have similar command over expert judgement (decisionism), and (iii) allowing a particular persuasive form of supposed value-free expertise in the form of objective scientism to override all other judgements (technocentrism). The oval representing what I term 'critical systemic responsibility' represent those factors outside the boundaries of the particular system of interest to which the expert is serving, but which may in a different place and time have emergent effects. Although there are risks of overstating the responsibilities in this sphere in terms of *either* blind human-centred (social) concerns (anthropocentrism) *or* blind ecocentric (ecological) concerns (ecocentrism), ideally

such risks are countered by the use of the prefix 'critical' in relation to systemic responsibility. Figure 1 raises the question regarding the different nature of responses required by experts between the dual spheres of responsibility.

It is significant that Churchman's original term for the 'witness' (category 10) was the 'systems philosopher' (1979 p.80). It suggests to me an important reflective dimension to the 'systems practitioner' (category 7). The key concern (category 11) for the systems philosopher is described by Churchman in terms of 'enemies of the systems approach' which figures prominently in the title of his 1979 book *The Systems Approach and Its Enemies*. Ulrich later renamed this category as 'emancipation':

> "... it [emancipation] reminds us that social mapping and design is not merely a matter of instrumental orientation toward some purpose (as functionalistic "systems science" seems to assume), but that for *socially* rational planning it is essential that the planner initiate a *process of emancipatory self-reflection on the part of the affected*" (Ulrich, 1983 p.257 Original italics)

In my view, Churchman's notion of 'enemies' embodies the essence of response-ability from a critical systemic perspective. Being responsive to internal components (social and ecological factors) of a system of interest is relatively easy. We can generally communicate well with clients (or intended beneficiaries), those in command of necessary resources, and those other experts with the appropriate know-how to enable the system to perform. We are generally familiar with these stakeholder groups' concerns and associated key problems. In short, within a bounded system, we share a common rationale. Being responsive to factors external to a system of interest requires a different type of mindset and skills. Of course it is possible to respond without making an adjustment to the mindset rationale associated with the system of interest:

> "Social factors seem to be the 'spanner in the works', and some would argue that this is a major justification for command & control management, which is what often kicks in after some well intentioned initiative has 'failed' to deliver by day one"[6]

Command and control responses represent precisely the type of comfort zone response being criticised by Churchman in his very uncomfortable suggestion, as paraphrased by Flood (1999), that an effective learning system "entertains attack from its worst enemies" (p.61). In a recent article entitled *Terrorism: A Systemic View* (Ackoff and Strumpfer 2003) the authors document the acute paucity of response to the September 11 al-Qaeda terrorist attacks on the USA. For example, the strategy of disrupting al-Qaeda network through legal, economic and other related interventions assumes a particular though inappropriate 'organisational' metaphor of terrorist movements: "Whereas organisations consist of essential parts any of which, if destroyed, disrupts the functioning of the whole, networks have no parts on which functioning of the whole depends" (p.290). The article succinctly reveals the inappropriateness of conventional approaches to combating terrorism including (i) use

[6] An email student conference communication from a systems practitioner with some experience studying on our third level systems course at The Open University (April 2003)

of violence against violence, (ii) apprehension and imprisonment of terrorists, and (iii) the protection of potential targets. The authors go on to suggest that purposeful development initiatives in the very countries that produce terrorists is the only long-term sustainable approach to terrorism, and that such approaches need to address the root cause of terrorism rather than simply attempting to reduce its effects. The root causes are seen as "the inequitable distribution among nations of wealth, quality of life, and opportunities to improve either" (p.291).

It is not difficult to envisage the unease and discomfort generated by such a response. To be constructively responsive to 'enemies' from a critical systemic perspective requires an ability to cope with discomfort. Flood and Ulrich succinctly echo Churchman's ideas on 'enemies' in a joint statement affirming their commitment to a critical systems perspective:

> "… it is anticritical to expect that we can work toward a view with which "we all feel comfortable" (a bounded idea promoted by several eminent "systems thinkers"), be it with the outputs of methodological activities or indeed the methodological approach itself! Contrary to this, we propose that we should remain uncomfortable. A "truly" critical approach must be open to emancipation from itself and even to calls of abolishment, as must the "output" of methodological activities. As we take our theories to the practical world of men and women, we must equally allow these practical people to bring their worlds to our systems intervention" (Flood and Ulrich 1990)

Being response-able in a critical systemic sense requires shifting from a cosy 'group-think' mentality towards embracing instances of discomfort, and being open to changing boundaries. It might be suggested that such aspirations themselves constitute a type of group-think characterised by a vocabulary of critical systems 'speak' which merely reinforce and sustain rather than challenge existing boundaries. Indeed the critical systems community itself might often be seen by those outside as fairly tightly bound. Such viewpoints need to be seriously taken on board. A response-able community of practice needs to remain openly critical of its own premises and promises - to entertain attack from its worst enemies – and to be prepared to learn and change as a result. The difficulty and challenge resides in the notion that what is outside our immediately relevant systems boundaries is, from the perspective of the system of interest, essentially unbounded.[7]

5 Social and ecological responsibility

The tension or dialectic between a systems rationality and a systems irrationality as conceptualised in Churchman's 1979 *The Systems Approach and Its Enemies* has resonance with similar tensions identified in critical social theory, such as that between 'dominant narratives and subjugated narratives' (Foucault 1980) or between

[7] Churchman (1979) himself identifies and discusses four generic enemies: politics, morality, religion, and aesthetics. Whilst suggesting that these particular enemies "provide a powerful way of learning about the systems approach, precisely because they enable the rational mind to step outside itself and to observe itself (from the vantage point of the enemies)" (p.24), Churchman later comments "As to the exhaustiveness and exclusiveness of the four enemies, the proper response seems to be that the question is irrelevant, since these are not logical categories…" (p.26).

'systems and lifeworlds' (Habermas 1984). A particular point of concern for Churchman is locating the reflective practitioner (our own position) in such dualisms; in short, considering the tension between 'us' and 'them'. Responsibility requires examination of our relationship to those social and ecological factors that have been *de facto* marginalised ('them') from the system of interest to which we might be serving ('us'). It also involves reflecting on the pursuit of a wider ideological commitment towards emancipation.

In my view, the ideal of 'emancipation' from repressive conditions (effects of material conditions and/or false consciousness) provides a shared grounding or point of departure for critique. This does not imply that the concept or understanding of emancipation ought to remain beyond critique. With regards to ecological responsibility, there remains considerable concern (disquiet/ discomfort) regarding the common anthropocentric understanding of emancipation as a point of departure for critique. Just as Midgley (2001; 2003) reminds us that ideas of *improvement* need to be understood temporarily and locally, the precise expression and relevance of emancipation will be peculiar to the system of interest which we might be serving. Inviting different conceptions of 'emancipation' provides a source of discomfort characteristic of a critical systemic perspective on social and ecological responsibility. The remainder of this section provides two examples of incidences evident in my own research experience where issues of responsibility have generated discomfort.

Natural Resource-Use Appraisal in Botswana

Between 1994 and 1998 I was engaged with a doctorate research programme critically examining the use of appraisal methods like participatory rural appraisal (PRA) as a means for alleviating rural poverty and environmental degradation in less-developed countries. The fieldwork was undertaken in Botswana. A second order research *system of interest* constituted wider boundaries of natural resource-use appraisal for use in less-developed countries. For a detailed summary of the critical systemic strategy adopted, see Reynolds (1998).

My first order set of *systems of interest* consisted of three high profile projects using natural resource-use appraisal with varying degrees of participatory planning. The ineffective representation and expression of the affected in relation to natural resource use in developing countries provokes concern on two counts. First, there may be a generally weak sense of civil society in post-colonial countries, often accentuated in *rural* areas. Second, there is an emerging constituency of non-government organisations (NGOs), often generously supported by donor agencies, with claims to represent various constituencies of 'the affected' (particularly the poor, women, and ethnic minorities), but also prevalent in the business of providing expertise for resource use appraisal.

Natural resource-use appraisal, particularly as practised in developing countries, shows how expertise is becoming steadily more influential as a power base. The focus on micro-level political spheres, manifest through attention on PRA exercises, might be seen as symptomatic of a wider tendency towards distracting attention away from actual centres of authority and power in the development field. My research explored obstacles to the dialogue between the *involved* and the *affected* including the

degree to which 'experts' in appraisal systems are willing to lay out their plans for wider social (as distinct from 'systems') scrutiny.

The research problem is illustrated with correspondence from one of my interviewees; a key player in the promotion of PRA in Botswana for more than 7 years in the 1990s. The remarks are addressed in response to a public work-in-progress seminar paper that I presented on the three projects used as my case study material. The interviewee was part of a large consultancy firm and was appointed 'Chief of Mission' for one of the three projects. The first missive is addressed to the Director of the University affiliated institution responsible for supervising my research.

To: The Director

> "*As a large donor funded project (USAID $22 million)* we have collaborated with a great number of researchers in the last six years, principally from the UK, Canada and the USA... We do not expect to emerge unmarked from such experiences. Mr Reynolds ... lacks the courage to *test his hypothesis in the cold waters of objective analysis"*
> (18/01/97)

To: Martin Reynolds

> "...Unless you have a sampling strategy your paper remains no more than your own personal opinion and thus *inappropriate for public presentation...*"
> (13/01/97)

My use of italics in the extracts highlights three key features of concern regarding responsibility. First, the power sources and financial interests at stake are substantial. Natural resource-use appraisal in developing countries is big business. The question is what effects might this have on the relative importance of responsibilities to different stakeholders?

Second, whilst acknowledging that responsibility to other experts in the field is essential, and that use of 'sampling strategies' and 'cold' objective hypotheses testing undoubtedly have their place and value in the domain of investigation where factors might be duly 'controlled', the question remains as to whether such scientistic validity criteria are necessarily appropriate for all social research. The remarks also signal a tendency towards an over-zealous concern towards demonstrating responsibility to fellow 'experts' (technocentrism).

Finally, there is the related concern brought up regarding public presentation. This of course is ultimately a matter of judgement and responsibility which, for me, invites the question - what opportunities of response exist for those affected by inquiry?

My seminar paper and presentation was undoubtedly a provocation to project personnel from all three projects. In effect, I set myself up as the 'enemy'. The discomfort expressed at having my paper publicly presented was anticipated. Ample time was provided prior to the presentation for the project managers and others to make a considered response. My decision to present what I knew to be contentious issues at a public seminar was based upon a principle that project managers in the natural resource sector have privileged and responsible social positions in a country

endowed with natural resources yet subject to oppressive levels of rural poverty and growing land degradation. A key issue raised in the seminar was the extent to which appraisal experts might themselves be held response-able to those affected by their work. A claim made in my paper was that all too often the natural resource experts consider their work outputs as 'internal' and 'final' products rather than as part of a wider more purposeful endeavour.

Two postscripts are worth making. Firstly, the seminar event was reportedly one of the best attended of such research-in-progress events held in Botswana. Perhaps anticipated discomfort might be as much an alluring attraction as it is something perceived to generally avoid! Secondly, despite the provocation, the response being illustrated above was not typical of all project personnel who either attended and/or reported back to me on the seminar paper. I received a range of critical feedback from the event, all of which significantly shaped the eventual output of my thesis. In short, my own sense of discomfort through this engagement generated improved insights.

Operational Research and Environmental Management

In 1999 Gerald Midgley and myself from the Centre for Systems Studies (CSS) at the University of Hull were engaged with an action research project designed to create an agenda for the future role of operational research (OR) in environmental planning and management. The research involved individual and group interviews with planners associated with the public sector, business organisations and pressure groups, as well as providers of expert support to such planners. Our second order *system of interest* was the community of OR/ systems practitioners (including ourselves) and others with relevant expertise involved with supporting environmental management and planning. For detailed references on the ideas presented below, plus a full account of our research strategy and output, see Midgley and Reynolds (2001).

A first order *system of interest* for the initial phase of our research consisted of what might be called the 'users' of expert support (generally referred to as environmental planners). A series of interviews were undertaken with planners from the public sector, business organisations and environmental pressure groups, as well as expert 'providers' or practitioners, to identify key concerns.[8] Three generic issues were found to recur in both the environmental management literature and the interview data generated in our study:

1. *Complexity and uncertainty* (regarding the unpredictability of natural and social phenomena);
2. *Multiple and often conflicting values* (of those involved in environmental planning); and
3. *Political effects* (on those not involved in planning processes, including non-human nature).

[8] We found this conceptual distinction between providers and users of expert support a highly useful heuristic device whilst of course fully acknowledging that considerable overlap exist between these two groups.

The third recurring generic theme is recognition by expert practitioners and users of expert support of the need to account for the political effects of planning on people and non-human nature. Whilst a significant portion of the environmental planning work has been focused on risk management, this is usually seen as a purely technical function: the risks inherent in different scenarios need to be assessed (and sometimes quantified in financial terms) to inform *decision-making*. The responsibility is typically internal, towards those in command of resources. Risk assessors are generally loath to accept the possibility that whether a risk is worth taking involves making a *value* judgement. When 'problems' are identified, these are predominantly issues of the co-ordination and integration of programmes rather than with their implementation, where issues of 'the affected' are more likely to be raised.

Specific examples of political effects of expert support were cited in our research. For example, despite the fact that producing adequate sustainability indicators is seen as problematic by the vast majority of writers (a claim supported by our own literature review), this consensus of opinion is not being transmitted to those interested parties who stand to be affected by the practical decisions informed by such indicators. Evidence suggests that transferring forms of environmental impact assessment designed for affluent countries into less developed countries had significantly negative effects. Others describe the misuse of OR for social and environmental planning in vulnerable communities, highlighting issues like "escapism in figures", "clouding issues to make them unintelligible", "giving scientific backing to predefined policies", "using a cannon to kill a fly", "model fetishism", "focusing on the wrong issues", "satisfying ego trips of foreign researchers" etc.!(p.33). Such issues clearly signal tendencies towards a technocentric responsibility (to other experts) rather than a sincere client-based responsibility (to 'users' or intended beneficiaries).

In moving to our second order system of interest, expert practitioners, the history of OR has been characterised by a continual dialogue between theory and practice; planning and implementation. There has long been a concern for making OR more relevant and useful to the less well off and less privileged sections of society. In the 1980s this imperative gave rise to 'Community OR', a distinct community of practice amongst OR practitioners. Community OR is sometimes described as the use of OR with community groups and/or voluntary organisations, although in practice Community OR has also been undertaken with a variety of health and welfare organisations as well as multi-agency groups serving the community

The question is, should there be equivalent formal developments in OR to serve those affected by environmental planning? There have certainly been none yet, although there are examples in the literature of people arguing for methodological developments to ensure that the affected are taken into account in environmental planning and management. For example: (i) tools for 'political sensitivity mapping' as a means to counter the implementation effects of expert-driven sustainability indicators; (ii) an ethically based 'political model' for public debate to give formal expression to the dialectic between the 'natural science approach' and the 'neo-classical economic approach'; (iii) promotion of 'deliberative groups' for urban planning, which are different from 'focus groups' in that the former are designed to specifically address the concerns of those affected by plans (and the affected are kept at a distance from decision makers); (iv) a focus on the *informal* economy of waste pickers, itinerant buyers, small scrap dealers, wholesalers and households in India to design more

effective forms of urban solid waste management; (v) designs for a more *community based* environmental management system; and (vi) development of a permanent 'citizens clearing house' to provide views that can be considered alongside experts' risk assessments for the disposal of hazardous waste (p.34).

There are certainly many writers in OR and environmental management with a commitment to account for the effects of planning on people and the environment. In our view, in considering whether a formal sub-discipline of OR specialising in this should be established (like Community OR has been established to work with community groups and voluntary organisations), it is worth asking whether this is going to *raise awareness* of the need for OR practitioners to deal with the political effects of environmental planning, or whether it is going to *marginalise* these concerns. As we see it, if OR practitioners are going to have any success in establishing their specialism as a key contributor to environmental planning and management, they have to be able to deal with *all three* of the recurrent, generic issues uncovered by our research (complexity and uncertainty; multiple values; and political effects). Political effects are arguably no more and no less important than the other two.

One of the recommendations coming out of our project was that Environmental and Community OR practitioners (amongst others) could usefully form an alliance to implement the agenda (see Midgley and Reynolds (2003) for more specific discussion on this issue). We surfaced three reasons why this alliance would be beneficial: the need for a critical mass of activists; the importance of bringing environmental issues into Community OR; and the need for Environmental OR practitioners to learn more about the structured facilitation of community development. Development of such an alliance is not easy as it affects long-standing boundaries. Hopefully, continued debate will give rise to co-operation across the boundaries of these hitherto mostly separate enterprises.

6 Summary

A critical systemic perspective on social and ecological responsibility requires continual critical examination of our boundaries in relation to those factors (social and ecological) in the environment of the system of interest to which we might be serving. It involves reflecting on the rationale of our particular system of interest with the view of possibly changing the boundaries (thereby generating 'improvement') in pursuit of a wider ideological commitment towards emancipation.

The two examples discussed in the previous section signal issues of discomfort that arise from a critical systemic perspective on social and ecological responsibility. In both instances, two systems of interest can be identified; a first order one relating to the boundaries of the subject matter being researched, and a secondary one relating to the researcher's own boundaries. In each case, the sources of discomfort arise from perceived 'enemies'. In the Botswana-research case, boundaries of prominent responsibilities were identified amongst expert practitioners in the field of natural resource-use appraisal associated with three high-profile projects. These appeared to conform more with an in-house 'systems responsibility' (see Fig.1) rather than a critical external sense of responsibility. Clearly, this assertion itself constituted 'an

enemy' to at least some project personnel. Certainly it generated unease. The example illustrates two features of critical systemic responsibility. First, in playing out an 'enemy' role, there is the possibility of generating further entrenchment of dogmatic posturing. The command and control response to an 'enemy' can invoke expression of responsibilities to other stakeholders *in the system* – decision makers and/or collegiate bodies of professional expertise. Whilst this might be seen in immediate negative terms as reactionary, in the longer term I would argue that such responses serve to make the situation more transparent. Second, the example gives a feel to the potential discomfort experienced by the practitioner (myself!) engaged with the dual endeavour of responding to factors within a system (as an 'expert' within a research community) and to factors outside a system (as a 'witness').

The second example again illustrates effects from two levels of interest. With respect to the first order system of interest, the boundaries of 'planners' or users of environmental expertise were expressed in terms of three recurring generic themes. The third of these, political effects, provided the key source of discomfort for planners. A key disquieting 'enemy' for environmental planners and managers is the unforeseen consequences of implementation, both with regards to effects on social and ecological factors. For our second order system of interest, the boundaries are represented by disciplinary interests including community development, environment, agriculture, development studies, complex systems, etc.. The challenge for OR/ systems practitioners is seen as overcoming the 'enemy' of unfamiliar territory. Writ large, of course, this 'enemy' might be associated with any systemic interdisciplinary endeavour.

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